

EXHIBIT A
TO SWANSON DECLARATION

March 13, 2007

Steve Thompson, Manager
U.S. Fish & Wildlife Service
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2800 Cottage Way, Suite W-2606
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Lester Snow, Director
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236

Russ M. Strach, Assistant Regional Administrator
National Marine Fisheries Service
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814

Re: **Recommendations for Actions to Protect Delta Smelt**

Dear Sirs:

Earlier this year, the California Department of Fish and Game reported that the 2006 Fall Midwater Trawl Abundance Index for delta smelt was 41, the second lowest level ever recorded during the survey's 40-year history and the third consecutive year of record low abundances for this Endangered Species Act-listed fish.¹ Last month, the first delta smelt for this season were taken by the federal and state water project facilities. The current population levels, combined with peer-reviewed population viability analyses conducted for the species, clearly indicate that the delta smelt is in imminent danger of extinction. Recent scientific research has demonstrated that loss of delta smelt at the water export facilities, particularly during this critical winter/spring period, has been a major contributor to the species' population decline.

We are writing to urge you to take immediate actions to protect delta smelt and improve their habitat during this critical year and until plans for long-term management and recovery of the species are developed and implemented. Given the current precarious state of the species, these actions should go beyond those designed to minimize poor environmental conditions and harmful water management operations and instead provide conditions that are beneficial to the species.

¹ Delta smelt Fall Midwater Trawl Abundances Indices of 74 (in 2004), 26 (in 2005) and 41 (in 2006) were the third, first, and second lowest, respectively, measured since 1967.

The specific recommendations outlined below are based on the improved scientific understanding of delta smelt and its habitat, which has grown exponentially during the past few years. The actions are designed to: (1) minimize to the greatest extent possible direct mortality of delta smelt at the water export facilities and other Delta diversions; (2) facilitate movement of the fish to and from spawning and early rearing habitats; (3) improve estuarine habitat quality during the spring, summer and fall; (4) reduce diversion and hydrodynamic effects on summertime in-Delta primary and secondary production; (5) facilitate transport of food organisms downstream to delta smelt habitat; and (6) potentially prevent the expansion upstream of the invasive clam *Corbula amurensis* into the Delta.

The actions we recommend are similar to those developed and evaluated by your agencies last year as part of the “Pelagic Organism Action Matrix” and as “Potential Actions to Reduce the Effects of Water Management on Delta Smelt Reproduction, Growth and Survival Intended to Increase Delta Smelt Abundance”² and which are now included in the Resources Agency’s *Pelagic Fish Action Plan* (March 2007). However, our recommendations reflect our concern that, at this point, actions that simply minimize harm to the species may be insufficient to save the delta smelt: to reverse the decline of this species, we must adjust our management of this system to provide favorable environmental conditions. Furthermore, all of these actions can be implemented immediately via operational changes and/or minor changes in existing infrastructure. We recommend that your agencies implement the following actions:

- Manage Sacramento and San Joaquin River inflows and Delta water exports to prevent negative flow conditions on Old and Middle Rivers during late winter and spring (i.e., Old and Middle River flows ≥ 0 cubic feet per second [cfs] from February-June);
- Restrict export increases during wintertime pulse flow events to levels that avoid negative flows on Old and Middle Rivers;
- Extend the Vernalis Adaptive Management Program export curtailment beyond the required 31-day period until monitoring and salvage indicate that >95% of the delta smelt population is located downstream of the confluence of the Sacramento and San Joaquin Rivers;
- Do not install the barrier at the head of Old River;
- Do not install the south Delta agricultural barriers until monitoring and salvage indicate that >95% of the delta smelt population is located downstream of the confluence of the Sacramento and San Joaquin Rivers;

² The contents of these documents were presented at the 2006 Review of the Environmental Water Account (November 28-30, 2006) and are available at: <http://science.calwater.ca.gov/workshop/ewa.shtml>.

- Increase San Joaquin River flows and/or curtail water exports to maintain Old and Middle River flows no less than -5000 cfs during summer (July-September);
- Maintain X2 downstream of 80 km and/or maintain western Delta salinity at levels comparable to those measured during years in which *Corbula* had the most downstream distribution patterns during the fall (September-December).

Basically, these combined recommendations are designed to recreate as much as possible a spawning and rearing environment similar to the one in which delta smelt evolved and to reduce entrainment of adults and larvae in diversions.

These recommendations are not made lightly or without consideration for other beneficial uses of water resources in the Delta. However, given the critical state of this (and other) species and the good water supply conditions forecast for this year, we believe that significant new actions are both necessary and feasible. Extinction of the delta smelt, an important measure of Sacramento-San Joaquin Delta's ecological health, would be a tragedy. Given our impressive scientific understanding of this species and its ecosystem, much of it generated by research supported by your agencies, application of this knowledge would demonstrate commitment to sound stewardship of the Delta and its remaining native fishes.

There are clearly a number of important steps that can and should be taken to protect the delta smelt, and its ecosystem, at this critical time. Thank you for considering our recommendations and please contact us if you have any questions regarding them.

Sincerely,



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EXHIBIT B

TO SWANSON DECLARATION

June 1, 2007

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Lester Snow, Director
Department of Water Resources
P.O. Box 942836
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Russ M. Strach, Assistant Regional Administrator
National Marine Fisheries Service
650 Capitol Mall
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Sacramento, CA 95814

Re: **Recommendations for Actions to Protect Delta Smelt**

Dear Sirs:

More than two months ago we wrote expressing our deep concern for the delta smelt, whose population abundance had been critically low for three consecutive years and was clearly in danger of extinction. We recommended that, given the precarious condition of the species, significant new actions that went beyond minimizing poor environmental conditions and harmful water management operations and instead provided beneficial conditions to the species were needed. We outlined a series of specific changes in Delta water management operations that were based on our scientific understanding of the species and key factors contributing to its population decline and which could be implemented immediately. We also noted that the recommendations were not original with us but were similar to those in the Resources Agency's *Pelagic Fish Action Plan* (March 2007). During the following months, we received no meaningful response from state or federal fisheries agencies and none of our recommendations were implemented.

Several weeks ago, data from the California Department of Fish and Game 20 mm survey indicated that delta smelt numbers had fallen to a new record low and that their distribution was shifting from the northern Delta to the southern Delta, where these small fish are highly vulnerable to lethal entrainment at the SWP and CVP water export pumps. Increasing take of young delta smelt at the pumping facilities confirms that at least part of the population has been located in the southern Delta since early May (and probably earlier because fish smaller than 20 mm in length are not counted at the facilities). Based

on these data, the Delta Smelt Working Group (DSWG) declared that “an emergency response” was warranted in their May 15, 2007 Briefing Statement. To accomplish the goal of “no further entrainment of delta smelt”, they recommended that water project operations be modified to achieve non-negative net daily flow in Old and Middle Rivers and that those conditions be maintained until southern Delta temperatures reached 25°C. As of May 30, 2007, this emergency recommendation had not been effectively implemented and the numbers of delta smelt taken at the export facilities has markedly increased. A second recommendation of the DSWG to open the Delta Cross Channel gates for the purpose of improving transport of delta smelt in the central Delta downstream to the confluence was, inexplicably in our view, rejected earlier this week. Just yesterday, the California Department of Fish and Game finally stepped in to request that the State Water Project shut down its pumping operations to prevent further losses of the fish at that facility. However, negative flow conditions on Old and Middle Rivers persist, and they will be exacerbated by plans to continue decreasing flow in the San Joaquin River.

We are writing again to strongly urge you to take immediate actions to protect delta smelt and to improve their habitat during this critical year. As reported by the DSWG, “for an annual species such as delta smelt, failure to recruit a new year-class is an urgent indicator that the species has become critically imperiled”. We agree with DSWG’s assessment and reiterate all of our earlier recommendations for seasonal modifications in Delta water management operations. However, based on the new abundance and distribution data, the incomplete implementation of protection actions recommended by the DSWG last month, and the worsening take of the fish at the pumps even though export rates have been substantially reduced, we believe that an additional emergency action to transport juvenile delta smelt currently distributed in southern and central Delta downstream beyond the influence of the export pumps is now needed. Even under low export conditions, if San Joaquin River inflows to the Delta remain low or, worse, are reduced, persistent negative flow conditions will likely prevent delta smelt from successfully moving downstream beyond the influence of both the pumps and increasing southern Delta water temperatures. We therefore recommend that your agencies immediately implement the following actions:

- Increase San Joaquin River inflows to the Delta to a minimum of 3500 cfs for a minimum of 10 days while maintaining water export rates at their current low levels (<1200 cfs) with all agricultural barriers fully open; and
- Open the Delta Cross Channel gates.

This may be the last opportunity you have to take direct and timely actions that reduce water project-related mortality and help the fish move into suitable habitat where it can complete its life cycle and, we hope, persist as a species into next year. These actions should also benefit other species, such as longfin smelt and striped bass, which are in steep decline as well.

Emergency actions such as have just been instituted might not have been necessary if your agencies had committed to (and implemented) a plan of action for delta smelt even three or four months ago that had as a goal keeping the smelt out of reach of the pumps and moving them downstream to favorable habitats. We recommend therefore that you develop action alternatives for the next month, the next six months, the next year, and the next two to three years, and that you commit to implementing alternatives favored by your own staff scientists, consulting with outside experts. The actions should have measurable goals and objectives such as net positive outflow or low mortality of all affected life stages for delta smelt, longfin smelt, and striped bass at the Delta pumps. We recognize that factors other than water exports, such as toxicants, may be affecting delta smelt numbers so an action plan should also include ways to deal with these potential problems as well. You need to recognize that there would be a high degree of uncertainty in the effects of these actions, in good part because smelt and other pelagic fish numbers have slipped to such low levels that too few may be available for reliable monitoring. Nevertheless, our increased knowledge of what these fish need for survival makes firm action possible.

Thank you for considering our recommendations and please contact us if you have any questions regarding them.

Sincerely,



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EXHIBIT C

TO SWANSON DECLARATION

Delta Smelt Working Group (DSWG) Meeting Notes

May 14, 2007

Participating: Gonzalo Castillo (USFWS), Mike Chotkowski (USBR), Kevin Fleming (CDFG), Lenny Grimaldo (CDWR), Bruce Herbold (EPA), Tracy Hinojosa (CDWR), Victoria Poage (USFWS), Ted Sommer (CDWR), Jim White (CDFG), and Peter Johnsen (USFWS, convener and scribe)

For Discussion:

1. Update on delta smelt and Delta conditions
2. Larvae protection recommendation

Recommendation for WOMT:

The Working Group had the following recommendation for WOMT:

Manage Delta hydrology so that further entrainment of delta smelt is avoided. To achieve this, the Projects should modify flows to achieve a non-negative daily net flow (meaning daily net flow should not be southward) in Old and Middle River. This should be implemented as soon as possible and continue until southern Delta water temperatures reach 25⁰C, the lethal temperature threshold observed in the laboratory.

Meeting Notes:

1. The DSWG reviewed the results from the last 20-mm survey, the fifth survey of the year, which was conducted from May 7 through May 12. The survey collected 8 larvae resulting in a total of 25 larvae so far this year (Table 1). This is the lowest number of larvae ever collected (Table 1, Figure 1), representing about 7.7 percent of the 326 taken to this point in 2006, and only 7.1% of the 2000-2006 average of 353. The DSWG has reviewed the progression of catches that typically occur during the course of the 20 mm Survey to evaluate the chance that there will be an upswing in the number of larvae collected later this year that will bring 2007 catches more in line with previous years. The group considers such an increase in catch to be possible but unlikely.

Delta smelt larvae were collected in Cache Slough, the lower Sacramento River, lower San Joaquin River, and in Franks Tract (Figure 2). This is a change compared to the four previous surveys which mostly collected larvae in the Sacramento River and caught none in the central or south Delta (Figure 2). The presence of larvae in the central Delta increases the chance that they will be entrained at the SWP and CVP water export facilities. In fact, the first salvage of delta smelt larvae were observed at the CVP water export facility on May 11. It was also noted that the larvae collected in the central Delta ranged in length from 5 to 8 mm; a size too small to be efficiently sampled by the sampling gear. The density of larvae in the central delta is therefore likely higher than what is estimated by the survey. In contrast, larvae in the Sacramento River portion of the Delta were between 10 and 20 mm long. DFG staff has posted the results of the 20-mm survey to the web (<http://www.delta.dfg.ca.gov/data/20mm/>). The sixth 20-mm survey will start on May 21.

Water temperatures in the Delta are approaching 21⁰C. The lethal temperature threshold for delta smelt as observed in laboratory studies is 25⁰C. The Head-of-Old River barrier is in with three culverts open. VAMP has started and will be finished on May 22 followed by a planned ramp-up in water exports from a current combined 1,500 cfs to 5,500 cfs by May 28. OR/MR five-day average flow was about negative 1,200 cfs.

Table 1. Cumulative catch by 20-mm survey from 1995 to 2007.

Survey	Year												
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
1	12	82	6	6	86	33	9	0	31	7	3	0	7
2	40	246	31	19	239	139	26	32	59	25	13	0	10
3	135	1146	154	128	472	208	40	144	86	45	16	50	14
4	186	1874	369	188	846	357	128	187	117	234	84	72	17
5	232	2504	1229	346	1262	616	301	332	188	444	261	326	25
6	343	2889	1582	454	1733	906	501	382	320	563	477	690	
7	472	3192	1764	536	2066	2120	925	470	528	608	569	930	
8	598	3413	1807	587	2231	2469	1020	621	621	651	720	1084	

2. The combination of low numbers of adult delta smelt seen in the Spring Kodiak Trawl (SKT) and the record low number of larvae sampled in the 20-mm survey to date suggest that there is a high likelihood of a very low recruitment of adults. Further, water temperatures in the Delta have risen above the range wherein the majority of delta smelt spawning occurs, meaning that very little additional spawning is likely to take place this year. A failure to recruit adults will continue the decreasing trend seen in the Fall Midwater Trawl index since 2000. This situation creates a very high degree of concern within Delta Smelt Working Group.

Almost no adult delta smelt were collected in the central and southern Delta in the SKT surveys from January – May. The delta smelt larvae now being found in the central Delta have a high risk of entrainment and given the low abundance, minimizing entrainment is important. The DSWG discussed the possible origin of these larvae seen in the central Delta; i.e. if they were produced by fish that spawned in the central Delta or transported there after hatching in the northern Delta where most of the mature adults had been detected. It is not possible to come to a conclusion based on the information available now. However, regardless of their origin, avoiding entrainment of these larvae would be especially important if they represent as large a percentage of the annual production as the data from the last 20 mm survey suggest. For an annual species such as delta smelt, failure to recruit a new year-class is an urgent indicator that the species has become critically imperiled and an emergency response is warranted.

Based on these considerations the DSWG has concluded that it is of utter most importance to avoid any further entrainment of larvae at the CVP and SWP. The DSWG believes that this can be achieved if net flows in the Old River and Middle River are neutral or positive (northward net flow). The DSWG therefore recommends that the CVP and SWP use any management tool available to modify flows to achieve a non-negative daily net flow (meaning daily net flow should not be southward) in Old and Middle River. This should be implemented as soon as possible and continue until southern Delta water temperatures reach 25⁰C.

The group is not providing any prescriptive recommendation regarding the Head of Old River Barrier; however, it is possible that the HORB's influence on OMR flow may be significant. Removing the barrier may therefore be a possible management tool to help achieve the Working Group's recommendation.

The DSWG also discussed the different uncertainties related to understanding the current delta smelt distribution and abundance, the factors affecting distribution and abundance, the ability to achieve the recommendation, and the ability to measure any benefits from the recommendation on recruitment and population trends. First, the DSWG recognizes that water project operations are not the only forces driving down delta smelt numbers. Although we are confident that implementing the recommendation will reduce entrainment, it is uncertain whether it will substantially increase the percentage of this year's recruit class that survives to reproduce next winter. Secondly, the group also recognizes that it may not be possible, given flows and constraints on Project pumping, to achieve a zero net flow in Old and Middle River. Third, given that delta smelt densities appear to be near the lower limit at which the 20-mm Survey may reliably detect them, our ability to accurately assess distribution of delta smelt larvae and to evaluate the efficacy of the recommended action is likely to be very low.

Next meeting: Monday, May 21 at 3:00 pm via conference call.

Submitted,
PJ

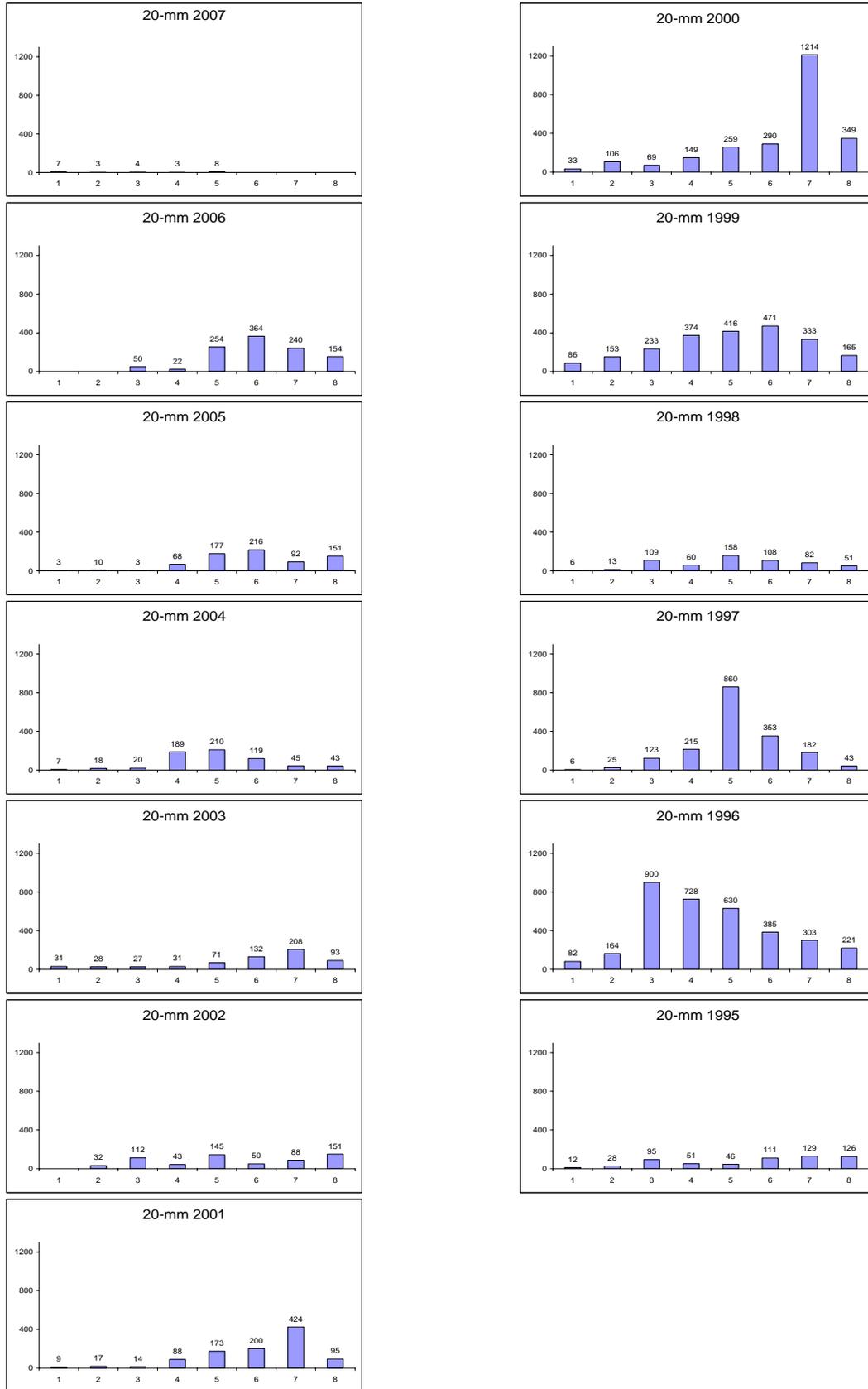


Figure 1. Number of larvae sampled by survey and year. The vertical axis is number collected in the CDFG 20-mm Survey. The horizontal axis is survey number.

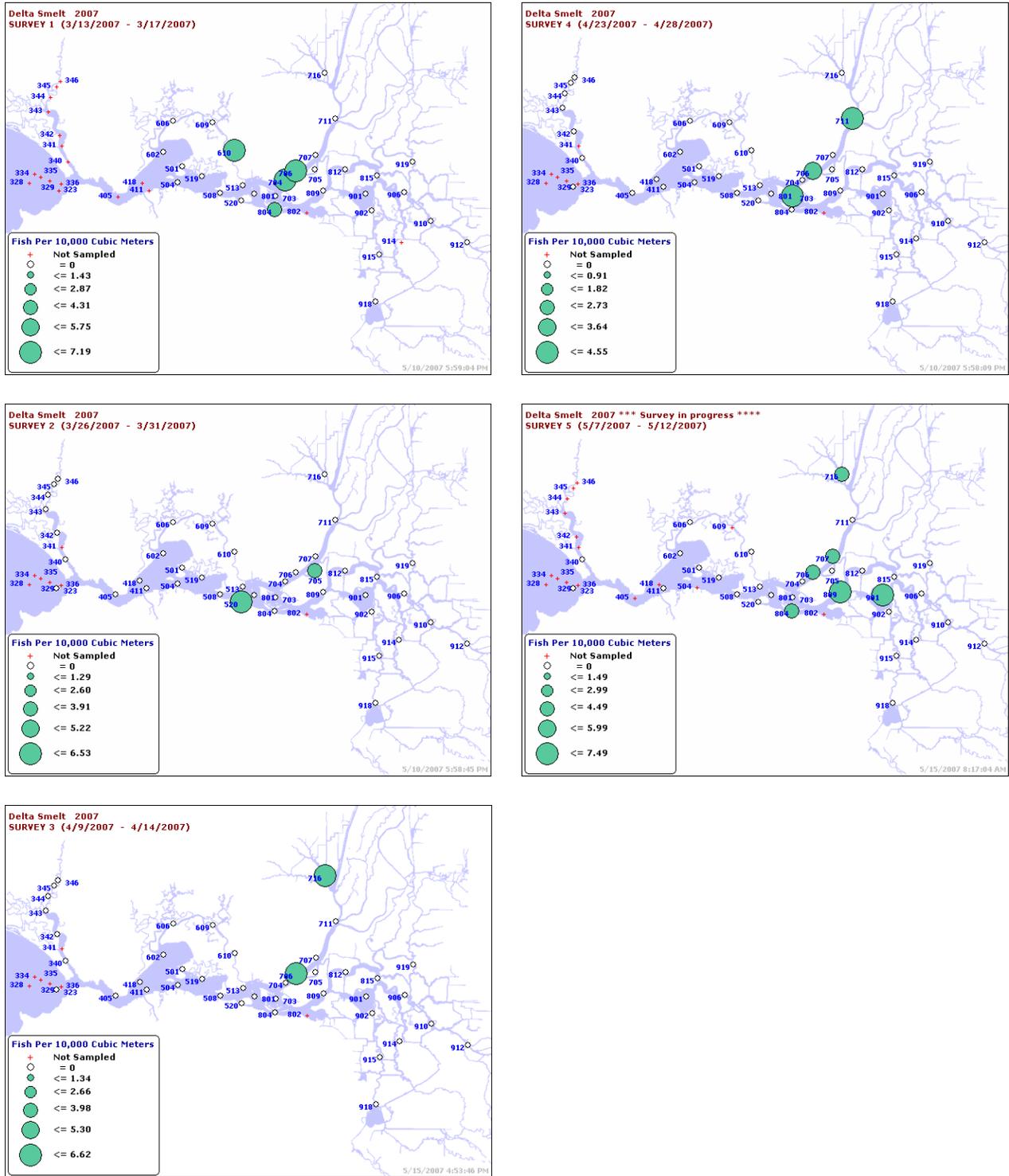


Figure 2. Summary of 20-mm Trawl survey for juvenile delta smelt, 2007. Early distributions of juveniles were similar to adult distribution as indicated by SKT results, but the latest survey results are less favorable.

EXHIBIT D
TO SWANSON DECLARATION

Briefing Statement

From: Delta Smelt Working Group

To: Water Operations Management Team

Date: May 15, 2007

Re: Recommendations for Spring Action

Problem:

To date, the 2007 20-mm Survey for juvenile delta smelt has collected record low numbers of juvenile delta smelt. After the fifth of eight surveys, only 25 individuals have been collected, about 7.7 percent of the 326 taken to this point in 2006, and only 7.1% of the 2000-2006 average of 353. The DSWG has reviewed the progression of catches that typically occur during the course of the 20-mm Survey to evaluate the chance that there will be an upswing in the number of larvae collected later this year that will bring 2007 catches more in line with previous years. The group considers such an increase in catches to be possible but unlikely.

The likelihood of a very low outcome creates a very high degree of concern for the Delta Smelt Working Group. Water temperatures in the Delta have risen above the range wherein the majority of delta smelt spawning occurs, meaning that very little additional spawning is likely to take place this year. Further, the most recent 20-mm Survey results shows that delta smelt are distributed in the central Delta, increasing the risk of entrainment. In fact, the first salvage of delta smelt juveniles were observed at the Federal water export facility on May 11. For an annual species such as delta smelt, failure to recruit a new year-class is an urgent indicator that the species has become critically imperiled and an emergency response is warranted.

Recommendation:

The goal is no further entrainment of delta smelt. To achieve this, the Projects should modify flows to achieve a non-negative daily net flow (meaning daily net flow should not be southward) in Old and Middle River. This should be implemented as soon as possible and continue until southern Delta water temperatures reach 25⁰C, the lab-lethal limit.

Uncertainties:

(1) The DSWG recognizes that water project operations are not the only forces driving down delta smelt numbers. Although we are confident the proposed action will reduce entrainment, it is uncertain whether it will substantially increase the percentage of this year's recruit class that survives to reproduce next winter. (2) The group also recognizes that it may not be possible, given flows and constraints on Project pumping, to achieve a zero net flow in Old and Middle River. (3) Given that delta smelt densities appear to be near the lower limit at which the 20-mm Survey may reliably detect them, our ability to accurately assess distribution of delta smelt larvae and to evaluate the efficacy of the recommended action is likely to be very low. (4) There is no prescriptive recommendation regarding the Head of Old River Barrier (HORB); however, it is possible that the HORB's influence on OMR flow may be significant. Removing the barrier may therefore be a possible management tool to achieve the Working Group's recommendation.

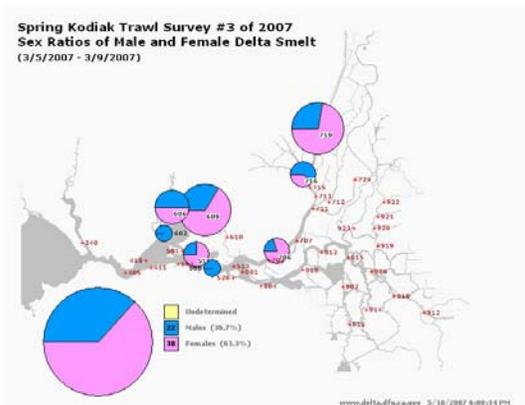
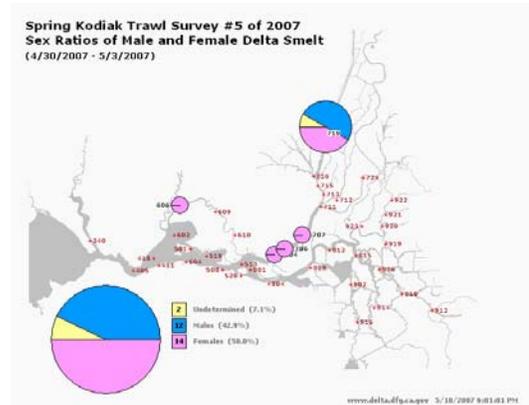
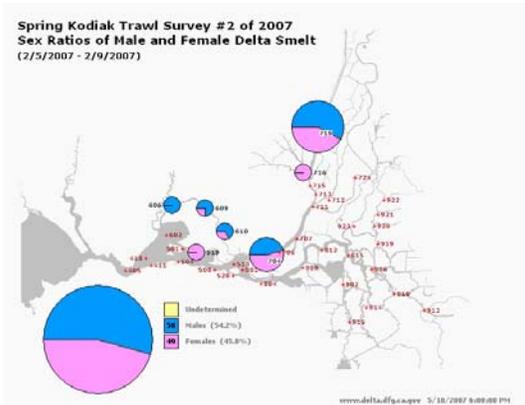
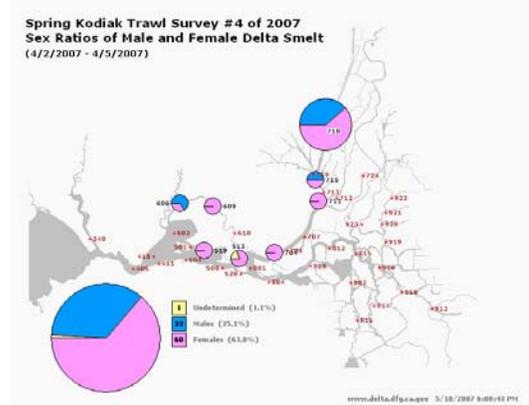
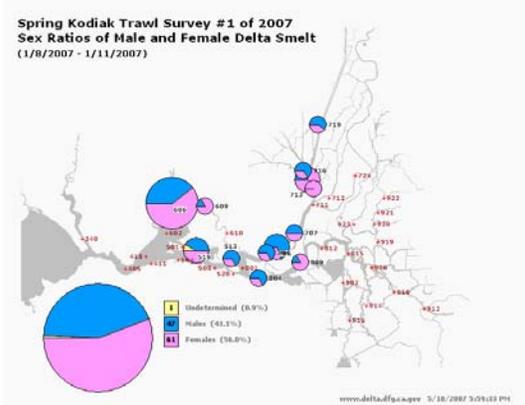
Management Implications:

The water cost of the recommended operational change is presently unknown, but may be significant.

Attachments:

1. Summary of Spring Kodiak Trawl survey for pre-spawning adult delta smelt
2. Summary of 20-mm Trawl survey for juvenile delta smelt
3. Frequency Distribution for 20-mm Survey
4. Frequency Distributions of Delta Smelt in the 20-mm Survey, 1995-2007
5. Frequency Distribution of Delta Smelt in the 20-mm Survey, 1995-2007. Equal scale on x-axis.

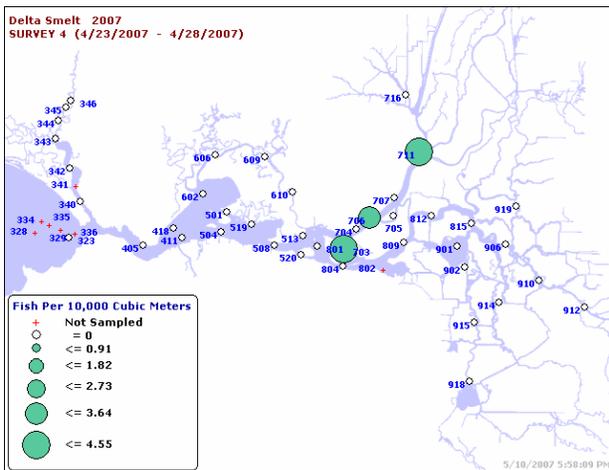
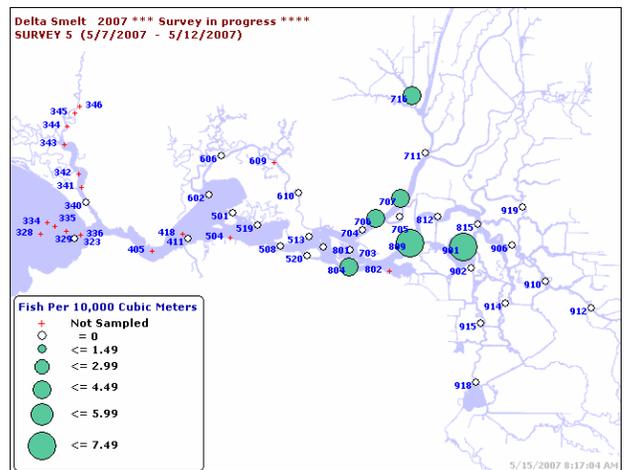
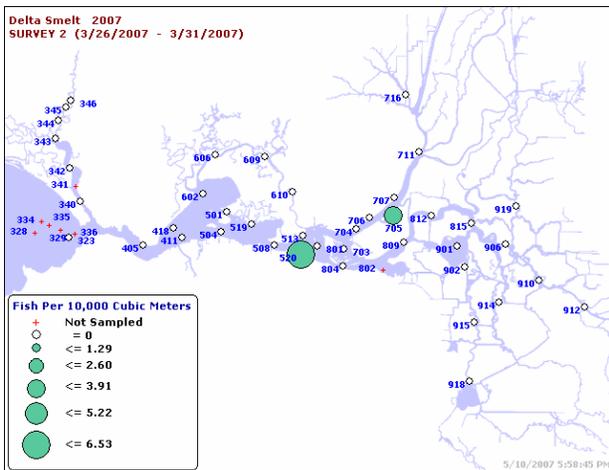
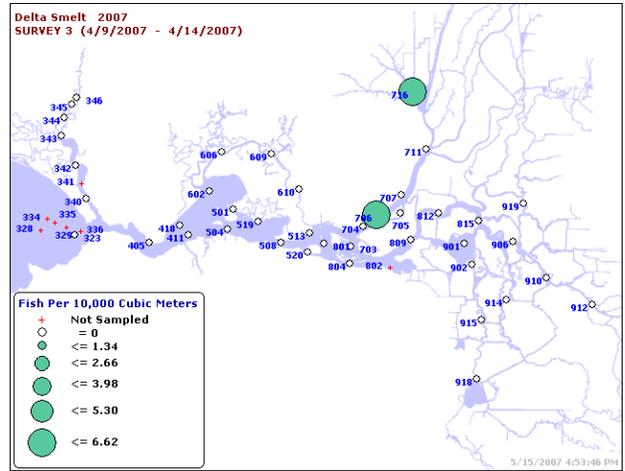
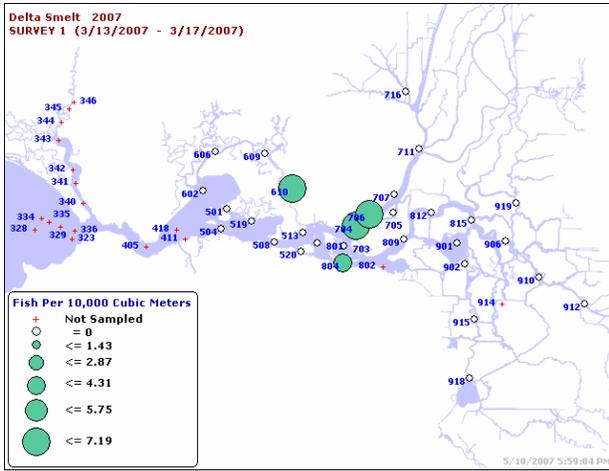
Attachment 1. Summary of Spring Kodiak Trawl survey for pre-spawning adult delta smelt, 2007. Note that the distribution of adult delta smelt appears to be favorable, with regard to risk of entrainment. Overall numbers collected were low relative to previous years.



Comparison of SKT surveys, by year

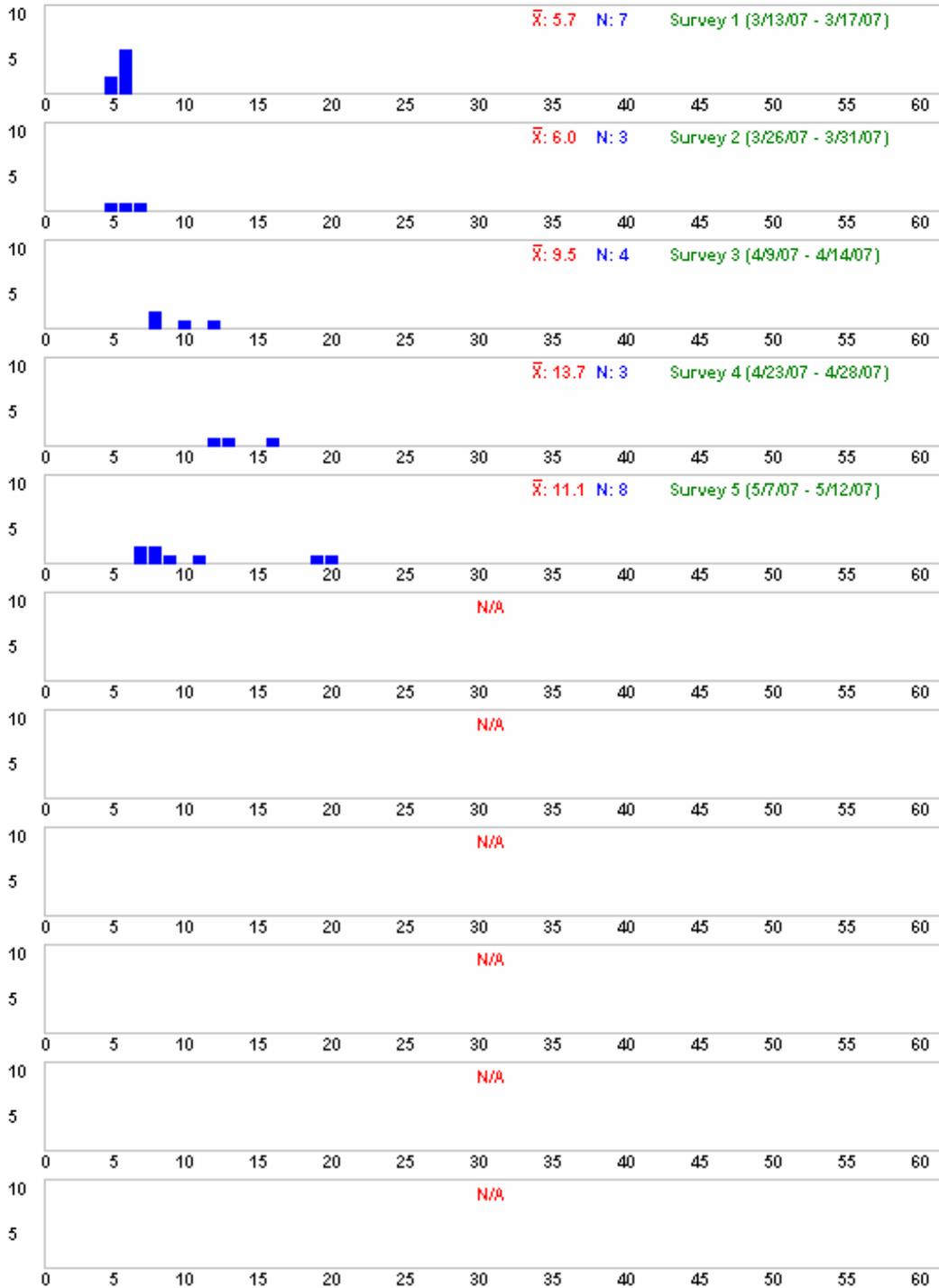
	2007	2006	2005	2004	2003	2002
1	109	42	220	380	232	261
2	107	84	218	300	373	392
3	60	70	27	196	43	238
4	94	77	28	62	33	-
5	28	14	-	13	-	-
N	398	287	493	951	681	891

Attachment 2. Summary of 20-mm Trawl survey for juvenile delta smelt, 2007. Early distributions of juveniles were similar to adult distribution as indicated by SKT results, but the latest survey results are less favorable. Overall numbers collected were extremely low relative to previous years.

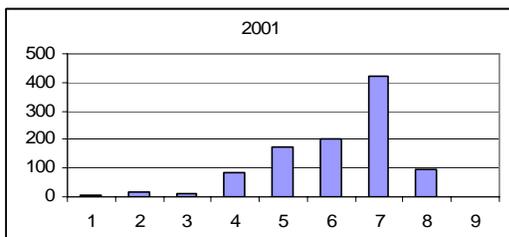
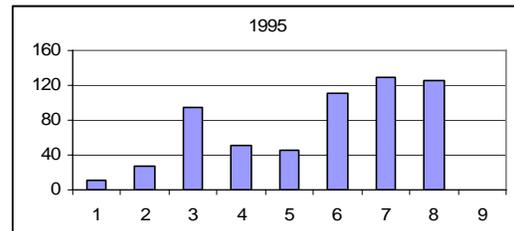
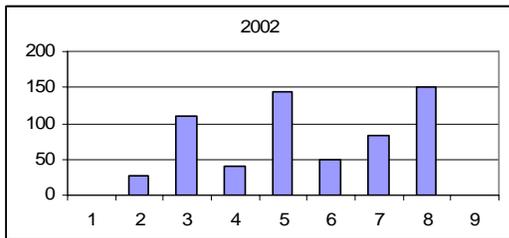
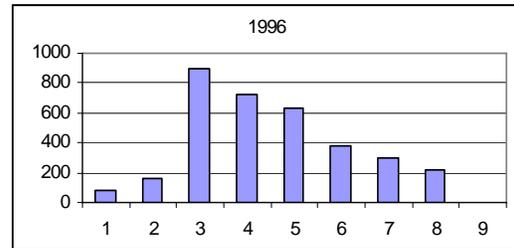
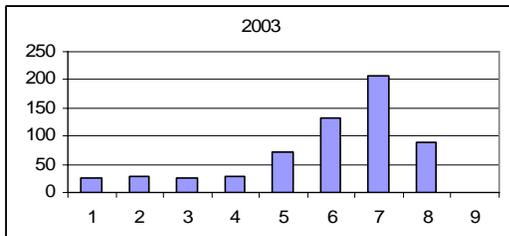
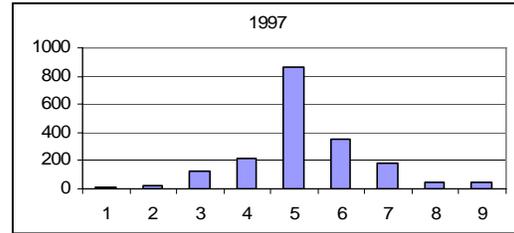
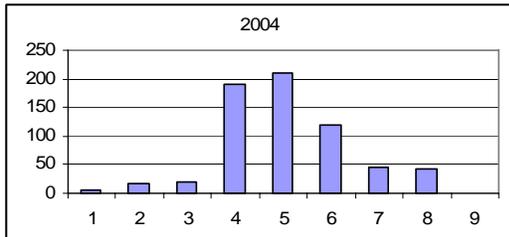
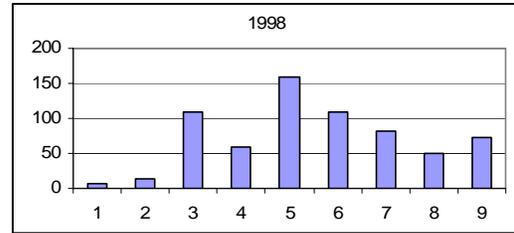
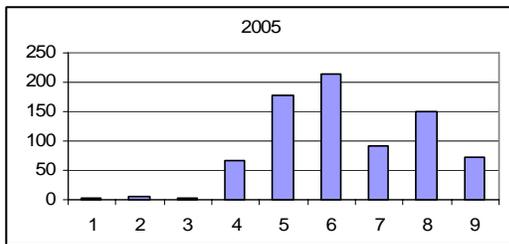
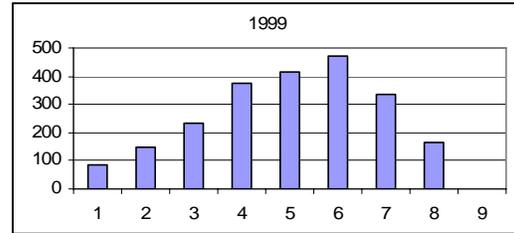
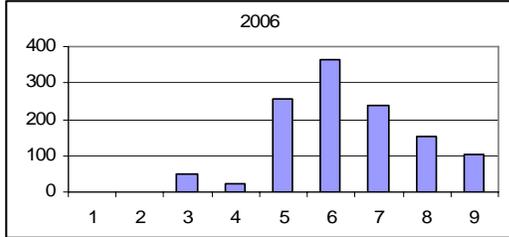
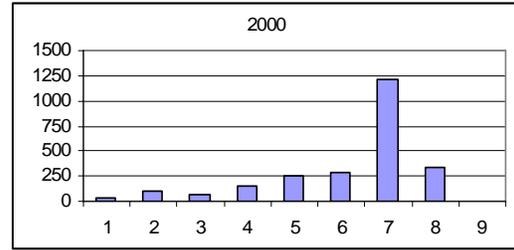
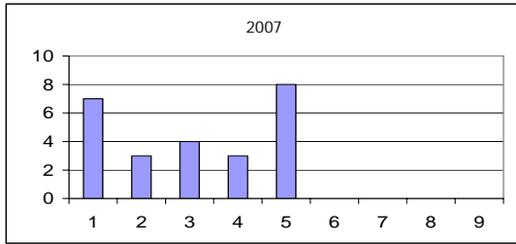


Attachment 3. Frequency Distribution of Catch, 20-mm Survey, 2007.

Delta Smelt Length Frequency for 2007

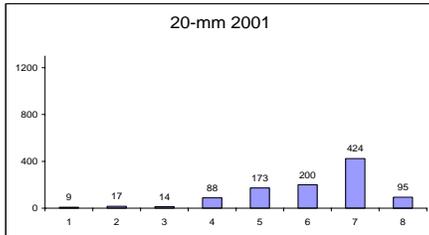
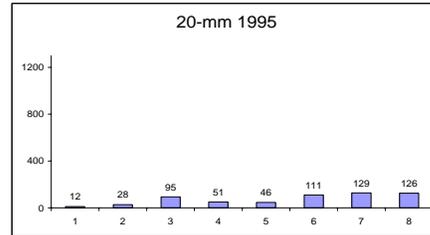
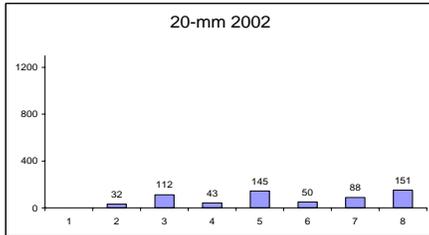
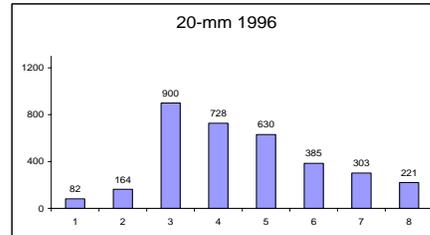
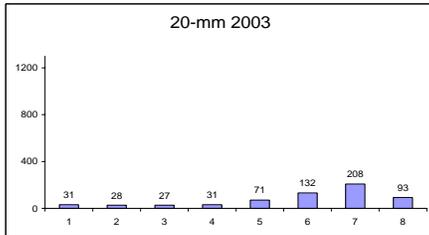
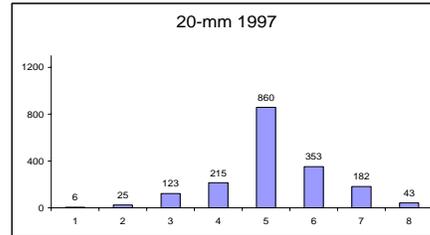
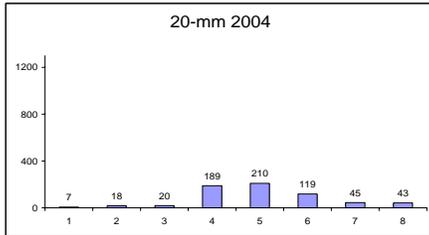
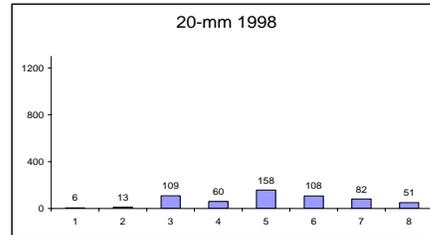
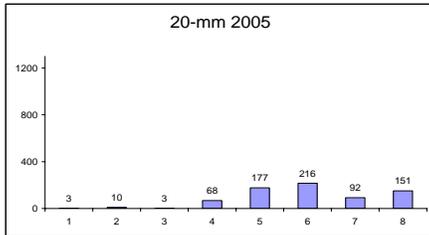
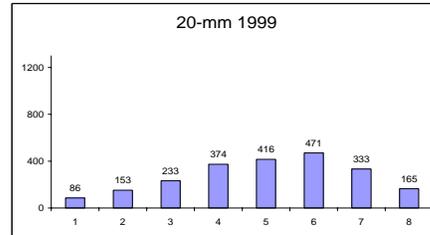
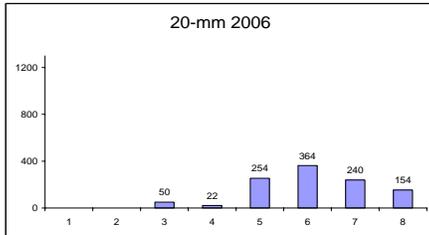
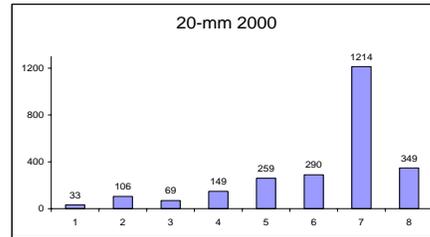
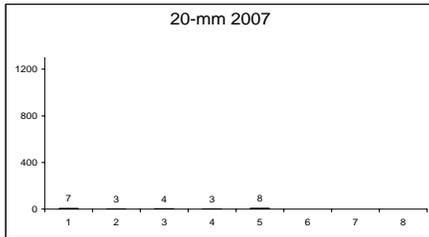


Attachment 4. Frequency Distributions of Delta Smelt in the 20-mm Survey, 1995-2007.



The vertical axis is number collected in the CDFG 20-mm Survey. The horizontal axis is survey number.

Attachment 5. Frequency Distribution of Delta Smelt in the CDFG 20-mm Survey, 1995 to 2007. Equal scale on x-axis.



The vertical axis is number collected in the CDFG 20-mm Survey. The horizontal axis is survey number.